

according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

- 1.1 Product Code:** 19456
Product Name: Clavulanate (potassium salt)
Synonyms: Potassium
 [2R-(2a,3Z,5a)]-3-(2-hydroxyethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate;
- 1.2 Relevant identified uses of the substance or mixture and uses advised against:**
Relevant identified uses: For research use only, not for human or veterinary use.
- 1.3 Details of the Supplier of the Safety Data Sheet:**
- Company Name:** Cayman Chemical Company
 1180 E. Ellsworth Rd.
 Ann Arbor, MI 48108
- Web site address:** www.caymanchem.com
- Information:** Cayman Chemical Company +1 (734)971-3335
- 1.4 Emergency telephone number:**
- Emergency Contact:** CHEMTREC Within USA and Canada: +1 (800)424-9300
 CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

- 2.1 Classification of the Substance or Mixture:**
- Flammable Solids, Category 2
 Self-Heating Substances, Category 2
 Serious Eye Damage/Eye Irritation, Category 2
 Respiratory Sensitization, Category 1
 Skin Sensitization, Category 1

2.2 Label Elements:



GHS Signal Word: Danger

GHS Hazard Phrases:

EUH014: Reacts violently with water.
 H228: Flammable solid.
 H252: Self-heating in large quantities; may catch fire.
 H317: May cause an allergic skin reaction.
 H319: Causes serious eye irritation.
 H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

GHS Precaution Phrases:

P210: Keep away from {heat/sparks/open flames/hot surfaces}. - No smoking.
 P235+410: Keep cool and protect from sunlight.
 P261: Avoid breathing {dust/fume/gas/mist/vapors/spray}.
 P264: Wash {hands} thoroughly after handling.
 P272: Contaminated work clothing should not be allowed out of the workplace.
 P280: Wear {protective gloves/protective clothing/eye protection/face protection}.
 P285: In case of inadequate ventilation wear respiratory protection.

GHS Response Phrases:

P302+352: IF ON SKIN: Wash with plenty of soap and water.

P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333+313: If skin irritation or rash occurs, seek medical advice/attention.

P337+313: If eye irritation persists, get medical advice/attention.

P342+311: If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.

P362+364: Take off contaminated clothing and wash it before reuse.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.3 Adverse Human Health Causes serious eye irritation.

Effects and Symptoms: Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by inhalation, ingestion, or skin absorption.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause skin or respiratory system irritation.
To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

CAS # / RTECS #	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	EC No./ EC Index No.	GHS Classification
61177-45-5 RN6802700	potassium [2R-(2.alpha.,3Z,5.alpha.)]-3-(2-hydroxyethylidene)-7- -oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate	100.0 %	262-640-9 NA	Flam. Sol. 2: H228 Self-Heat. 2: H252 Eye Damage 2: H319 Resp. Sens. 1: H334 Skin Sens. 1: H317 EUH014

Section 4. First Aid Measures

4.1 Description of First Aid
Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel.
Get immediate medical attention.

In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

Section 5. Fire Fighting Measures

- 5.1 Suitable Extinguishing** Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.
Media: Use water spray to cool fire-exposed containers.
Unsuitable Extinguishing A solid water stream may be inefficient.
Media:
- 5.2 Flammable Properties and Hazards:** No data available.
Hazards: No data available.
Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Autoignition Pt: No data.
- 5.3 Fire Fighting Instructions:** As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

- 6.1 Protective Precautions,** Avoid raising and breathing dust, and provide adequate ventilation.
Protective Equipment and Emergency Procedures: As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).
- 6.2 Environmental Precautions:** Take steps to avoid release into the environment, if safe to do so.
- 6.3 Methods and Material For Containment and Cleaning Up:** Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

- 7.1 Precautions To Be Taken in Handling:** Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure.
- 7.2 Precautions To Be Taken in Storing:** Keep container tightly closed. Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

CAS #	Partial Chemical Name	Britain EH40	France VL	Europe
61177-45-5	potassium [2R-(2.alpha.,3Z,5.alpha.)]-3-(2-hydroxy ethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate	No data.	No data.	No data.
CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
61177-45-5	potassium [2R-(2.alpha.,3Z,5.alpha.)]-3-(2-hydroxy ethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate	No data.	No data.	No data.

8.2 Exposure Controls:

- 8.2.1 Engineering Controls** Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne (Ventilation etc.): levels below recommended exposure limits.
- 8.2.2 Personal protection equipment:**
- Eye Protection:** Safety glasses
- Protective Gloves:** Compatible chemical-resistant gloves
- Other Protective Clothing:** Lab coat
- Respiratory Equipment** NIOSH approved respirator, as conditions warrant.
- (Specify Type):**
- Work/Hygienic/Maintenance Practices:** Do not take internally.
Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.
Wash thoroughly after handling.
No data available.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

- Physical States:** [] Gas [] Liquid [X] Solid
- Appearance and Odor:** A crystalline solid
- Melting Point:** No data.
- Boiling Point:** No data.
- Flash Pt:** No data.
- Evaporation Rate:** No data.
- Flammability (solid, gas):** No data available.
- Explosive Limits:** LEL: No data. UEL: No data.
- Vapor Pressure (vs. Air or mm Hg):** No data.
- Vapor Density (vs. Air = 1):** No data.
- Specific Gravity (Water = 1):** No data.
- Solubility in Water:** No data.
- Solubility Notes:** Soluble in: MeOH;
- Autoignition Pt:** No data.

9.2 Other Information

- Percent Volatile:** No data.
- Molecular Formula & Weight:** C₈H₈NO₅ • K 237.3

Section 10. Stability and Reactivity

- 10.1 Reactivity:** No data available.
- 10.2 Stability:** Unstable [] Stable [X]
- 10.3 Stability Note(s):** Stable if stored in accordance with information listed on the product insert.
Maintain air gap between stacks/pallets.
Store away from other materials.
- Polymerization:** Will occur [] Will not occur [X]
- 10.4 Conditions To Avoid:** Reacts violently with water.
Flammable solid.
Self-heating in large quantities; may catch fire.
- 10.5 Incompatibility - Materials To Avoid:** strong oxidizing agents
water
- 10.6 Hazardous** carbon dioxide

Decomposition or Byproducts: carbon monoxide
hydrogen cyanide
nitrogen oxides
potassium oxides

Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.

Chronic Toxicological Effects: Clavulanate (potassium salt) - Toxicity Data: Oral LD50 (rat): 7936 mg/kg; Intraperitoneal LD50 (rat): 1399 mg/kg; Subcutaneous LD50 (rat): 1398 mg/kg; Oral LD50 (mouse): 4526 mg/kg; Intraperitoneal LD50 (mouse): 1531 mg/kg; Subcutaneous LD50 (mouse): 2185 mg/kg;

Clavulanate (potassium salt) - Investigated as a reproductive effector.

Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

Clavulanate (potassium salt) RTECS Number: RN6802700

CAS #	Hazardous Components (Chemical Name)	NTP	IARC	ACGIH	OSHA
61177-45-5	potassium [2R-(2.alpha.,3Z,5.alpha.)]-3-(2-hydroxyethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate	n.a.	n.a.	n.a.	n.a.

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment.
Runoff from fire control or dilution water may cause pollution.

12.2 Persistence and Degradability: No data available.

12.3 Bioaccumulative Potential: No data available.

12.4 Mobility in Soil: No data available.

12.5 Results of PBT and vPvB assessment: No data available.

12.6 Other adverse effects: No data available.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Flammable solids, organic, n.o.s. (Potassium [2R-(2á,3Z,5á)]-3-(2-hydroxyethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate)

DOT Hazard Class: 4.1 FLAMMABLE SOLID

UN/NA Number: UN1325 **Packing Group:** III





SAFETY DATA SHEET

Clavulanate (potassium salt)

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Flammable solids, organic, n.o.s. (Potassium [2R-(2á,3Z,5á)]-3-(2-hydroxyethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate)

UN Number: 1325 **Packing Group:** III

Hazard Class: 4.1 - FLAMMABLE SOLID

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Flammable solids, organic, n.o.s. (Potassium [2R-(2á,3Z,5á)]-3-(2-hydroxyethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate)

Additional Transport Information: Transport in accordance with local, state, and federal regulations.

When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10.

Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
61177-45-5	potassium [2R-(2.alpha.,3Z,5.alpha.)]-3-(2-hydroxyethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate	No	No	No

CAS #	Hazardous Components (Chemical Name)	Other US EPA or State Lists
61177-45-5	potassium [2R-(2.alpha.,3Z,5.alpha.)]-3-(2-hydroxyethylidene)-7-oxo-4-oxa-1-azabicyclo[3.2.0]heptane-2-carboxylate	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No

Regulatory Information Statement: This SDS was prepared in accordance with 29 CFR 1910.1200 and Regulation (EC) No.1272/2008.

Section 16. Other Information

Revision Date: 07/01/2016

Additional Information About This Product: No data available.

Company Policy or Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.